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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,628	09/30/2003	Ying Wen Hsu	703427.4002	7844

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EXAMINER

LEPISTO, RYAN A

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

CT

Office Action Summary

Application No.

10/676,628

Applicant(s)

HSU ET AL.

Examiner

Ryan Lepisto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-12,14,16 and 17 is/are rejected.
- 7) ☒ Claim(s) 3-5,13 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 22 November 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. The article entitled "Automated Fiber-Waveguide Array Alignment" has not been submitted.

Drawings

2. The replacement drawings were received on 27 December 2004. These drawings are accepted.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-2, 6-12, 14 and 16-17** are rejected under 35 U.S.C. 102(b) as being anticipated by **Delapierre (US 5,278,692)**.

With regard to **claims 1-2 and 6-10**: Delapierre teaches an optical switching apparatus (Fig. 1) comprising a substrate (8), a movable rotary structure (10) formed by

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semiconductor processes on the substrate (column 5 lines 57-65) suspended at a distance from the substrate (8) so as to be movable relative to the substrate (8) (rotary movement, column 4 lines 6-7), an actuator (16, 18, 20, 22) to move the rotary structure (10) from a first position to a second position relative to the substrate (8) (column 4 lines 55-65), mirror-less waveguides (30, 32) mounted to the rotary structure (10) so as to move with the rotary structure (10) and defining two optical paths (part of 30, 32) so that in a first position an optical signal passes along a first path and in the second position an optical signal passes along a second path (column 4 lines 55-65), and an input stationary waveguide (28) coupled to the substrate (8) and positioned to transmit a signal over an air gap (60) (column 7 line 32) between the waveguide (28) and the optical paths (part of 30, 32) wherein the air gap (60) is oriented in a semi-circle and the waveguides (30, 32) (and therefore the optical paths) have a large radius of curvature (apparent in Fig. 1, which will change the direction of the optical signal) so it is apparent that the gap is oriented at an oblique angle as shown in the applicant's drawings with the waveguides having a large radius of curvature causing an oblique angle gap.

The switch occurs by aligning the first waveguide (30) to an input signal from waveguide (28) in the first position or aligning the second waveguide (32) to an input signal from waveguide (28) in the second position (column 3 lines 60-66) and output a signal to output stationary waveguides (24, 26) coupled to the substrate (8) to receive a signal from the first (30) or second (32) waveguides over a second gap (the whole circular gap is labeled 60) wherein the gap is at an oblique angle as described above

and where the gap is precisely optimized at a width of 5 micrometers (column 7, lines 32-33) while still allowing movement of rotary structure (10).

With regard to **claims 11-12, 14 and 16-17**: Delapierre teaches an optical switching apparatus (Fig. 6-7) comprising a substrate (70), a movable rotary structure (72) formed by semiconductor processes on the substrate (column 5 lines 57-65) suspended at a distance from the substrate (70) so as to be movable relative to the substrate (70) (rotary movement, column 8 lines 18-19), an actuator (94, 96, 98) to move the rotary structure (72) from a first position to a second position relative to the substrate (70) (column 4 lines 55-65), mirror-less waveguides (82, 84, 86) mounted to the rotary structure (72) so as to move with the rotary structure (72) and defining three optical paths (part of 82, 84, 86) so that in a first position an optical signal passes along a first path and in the second position an optical signal passes along a second path (column 4 lines 55-65), and an input port (either side of Fig. 7) with input stationary waveguide (80) (which can be coupled to any number of the structure shown in Fig. 7 that are each equivalent to the structure shown in Fig. 6) coupled to the substrate (70) and positioned to transmit a signal over an air gap (111) (column 9 line 25) between the waveguide (80) and the optical paths (part of 82, 84, 86) wherein the air gap (111) is oriented in a semi-circle and the waveguides (30, 32) (and therefore the optical paths) have a large radius of curvature (apparent in Fig. 6, which will change the direction of the optical signal) so it is apparent that the gap is oriented at an oblique angle as shown in the applicant's drawings with the waveguides having a large radius of curvature causing an oblique angle gap.

The switch occurs by aligning the first waveguide (82) to an input signal from waveguide (80) in the first position or aligning the second waveguide (84) to an input signal from waveguide (80) in the second position (column 3 lines 60-66) and output a signal to a plurality of output stationary waveguide ports (74, 76, 78) coupled to the substrate (70) to receive a signal from the first (82) or second (84) or third (86) waveguides over a second gap (the whole circular gap is labeled 111) wherein the gap is at an oblique angle as described above and where the gap is precisely optimized at a width of 5 micrometers (column 7, lines 32-33) while still allowing movement of rotary structure (72).

Allowable Subject Matter

4. **Claims 3-5, 13 and 15** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: These claims would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims because the latter, either alone or in combination, does not disclose nor render obvious a notch in a first edge of the movable microstructure extending in a Y direction, a second edge extending in an X direction wherein the X and Y directions are perpendicular to each other, a third edge, and fourth edge extending parallel to the X direction wherein the optical signal enters the first set of paths at the fourth edge and

the gap is located adjacent to the fourth edge or the notch, in combination with the rest of the claimed limitations.

Response to Arguments

5. Applicant's arguments, filed 27 December 2004, with respect to the continuation application have been fully considered and are persuasive. The objection to the application being a continuation instead of a continuation-in-part is removed.

6. Applicant's arguments filed 27 December 2004, with respect to the rejection(s) of claim(s) 1-17 under obviousness type double patenting have been fully considered and are persuasive per the terminal disclaimer filed. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Delapierre as described above.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Labeye et al (US 5,612,815), Horino et al (US 6,219,472 B1) and Nishiyama et al (US 6,169,826 B1) teach a movable substrate with two waveguide paths used as a switching apparatus.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan Lepisto

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Date: 2/9/05



Frank Font

Supervisory Patent Examiner

Technology Center 2800